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The Adaptation of Industrial Protocols for a Space Messaging Service

by
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Abstract

A standard data system interface for space data systems will have a major impact on the cost of building spacecraft and the ground systems built to support their operation. Properly designed, a standard interface will provide a "plug-and-play" environment for the construction of spacecraft and ground systems. Using the standard, commercial vendors of spacecraft devices, spacecraft instrumentation and ground support systems could build and market products that would be installed without the traditional software development effort.

The Space Messaging Service has been proposed as a data system interface standard as a part of a NASA effort to develop an "open specification" called the Space Project Mission Operations Control Architecture (SuperMOCA). This paper provides a brief overview of the SuperMOCA effort. The problem domain addressed by the Space Messaging Service is examined and the rationale for a messaging service is discussed in detail. The selection of the Manufacturing Message Specification (MMS -ISO 9506) as the basis for a Space Messaging Service is reviewed. The emerging Fieldbus specification, its relationship to MMS and potential application in SuperMOCA is also discussed. Several scenarios for the application of the Space Messaging Service are posed and examined to illustration potential applications. Finally, potential modifications to the industrial standards to address the space environment are proposed and discussed.